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## Belief and Conation

BY

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The innately differentiated dispositions of men have as their biological function the survival of the individual possessing them and they direct the desires which have been evolved in him by the operation of the ordinary laws of natural selection. These primary desires grow gradually in complexity through the individual's experiences and create a multitude of needs in life which cry out for satisfaction, but they cannot be immediately satisfied on account of the limitation in the materials for satisfying them. So the necessity to satisfy our desires stimulates us to choose means and to believe in their adequacy, but the beliefs thus formed under the influence of desires aim exclusively at the satisfaction of the desires ; the objective condition so believed in forcibly presents to the mind only that is favourable to the end and offers strong resistance to its thinking otherwise. So when our mind becomes strongly pre-occupied by certain desires we believe whatever favour our interests and disbelieve what are opposed to them. The belief or the disbelief is thus largely determined by the operation of our desires. We believe what we desire to believe ; we yearn to believe what is agreeable and resist unpleasant truths. C. S. Pierce will perhaps describe this sort of belief as being fixed on the method of tenacity in which persons refrain from

entertaining any considerations which may tend to shake the belief. But our desires are of many-fold character and have different basis in the innate structure of mind. So we shall now see how the self-assertive and other self-regarding impulses, fear, temperament, etc., affect our belief-attitude in the different spheres of life.

Perception calls forth our belief in the perceived, but perception is not a mere flux of sensations, it involves judgment whether explicit or implicit, and then establishes belief. Implicit judgment takes place when the sensory impressions are very clear. Here the conative element does not become active unless our belief, as when we see a rose and believe in its identity, is opposed or doubted. Explicit judgment, giving rise to belief, acts upon the vague and insufficient sensory impressions. Here the sensory marks, necessary for our judgment but not hitherto recognised, are imaginatively anticipated. In this act of anticipation we differ from one another and fill out vague patterns differently. As a consequence our belief in the object becomes also different.

Mind has a general trend of its own which depends not only on the co-ordination of the innate dispositions but is also largely influenced by the glandular and other organic states. Persons vary in this general trend which determines their temperaments, such as 'hopeful,' 'despondent,' 'placid,' etc. But it is the general trend or temperament which controls the anticipated impressions in the determination of our judgment for the belief in the object which is vaguely perceived through the senses. Suppose A, B, and C, men of different mental trends, are long waiting for a train at the station. Now a dark speck is visible at a long distance. A being a man of hopeful temperament will believe it to be the train, but B having a general despondent trend of mind, will at once disbelieve it; while C being of placid temperament will suspend his judgment and may further scrutinise it. Here the sensory impressions, as received by them, are more or less

the same, but the difference in their general mental trend causes a variation in the anticipation of other marks which are not hitherto perceived. So their belief in the object varies ; but if their opinion be opposed their conative impulse becomes assertive and they will then argue to justify their own position. The influence of the conative factor in the determination of belief is in greater degree evinced in the process of rationalisation. Even in the hallucinatory belief of a simple type—as when we mistake a tree for a ghost at night—individual temperament is largely involved. The person in whom the instinct of fear is easily excited becomes frightened and reads his own ideas into the sensory cues as presented by the tree in darkness. So he accepts the object as a real ghost out of fear and becomes much susceptible to suggestion which again evokes in him submissive impulse on the side of affirmation. This determination of our belief on the perceptual level by the overflowing of an instinctive impulse can also be illustrated when a drowning man accepts whatever foothold presents itself to him as a real support in order to escape death.

Pierce also stresses the method of authority to fix men's beliefs. But the imposed authority cannot induce us to judgment nor determine our beliefs unless our temperament is docile and our attitude is submissive, that is to say, our submissive impulse works as a force to determine our judgment in conformity with the authoritative assertion. History is too full of the triumphs and the failures of this method. Thus we see so far that our temperaments intermingled with the instinctive impulses make us differently interested in the object and determine our belief-attitude considerably.

So it can hardly be said that our belief always precedes knowledge. The contention that all knowledge is conditioned by belief is one which may command much of our sympathy and has found favour both with philosophers and theologians of repute ; nevertheless we cannot give to it our psychological

support. Knowledge is primary and from this route rises an outgrowth of beliefs of lively form and living power. The pre-supposition of every belief is the knowledge that the object exists. So belief springs from knowledge or cognition. Knowledge is not only antecedent to but also the crown of belief. The higher also our states of belief become the more must they be grounded in thought. So the rôle of cognition in the determination of belief cannot be ignored as is done by Hamilton and others who take belief to be "the primary condition of reason." But we must at the same time be careful not to urge an intellectual theory of the origin of belief, because cognition alone is not sufficient to determine our belief. It results from the interplay of cognition and conative impulse—both are essential. The stronger the impulse or the desire the more intense the feeling of belief. It is true no one is completely logical and no one is devoid of the logical impulse and a certain logical consistency. But the psychological trend runs more deeply, more pervasively. So the personal element can hardly be removed from its place of dominion in the formation of belief. For this it is often said that there are no beliefs but only believers who believe in conformity with their own psychology. The wish is father to the thought. Even in perceptual belief as illustrated above we imaginatively anticipate some marks not actually perceived in the object and seek to verify them perceptually. "Truth," Lowell explains, "is said to lie at the bottom of well for the very reason, perhaps, that whoever looks down in search of her sees his own image at the bottom, and is persuaded not only that he has seen the goddess, but that she is far better-looking than he had imagined." This is also notably true in delusional and other pathological beliefs which are strikingly individual and markedly possessed of the personal factor. The pre-potent tendency gets over our logical sense and it is very difficult to get rid of its influence. So our beliefs, such as those in horoscopes, palmistry, clairvoyant mediums, etc., are all mostly due

to prepossession, which means a willingness to dispense with logical requirements in the interests of a cherished conviction. So the conative element is found to work behind the cognitive process and is further reinforced in belief by pleasurable anticipation of the desired goal. So belief is not wholly a cognitive process—it is a resultant of cognition and conation—a compromise of logic with psychology. The influence of personal psychology in the formation of belief cannot altogether be done away with even in disciplined minds. In political beliefs the most essential thing is the sense of attachment which can be inculcated as readily upon the platform of absolute autocracy in government as of the freest democracy. Here it may be said that the distinctively personal factor is not much conspicuous, because the individual merges with the collective mass and even surrenders to it. This however does not detract from the personal intensity of conviction ; for the integrity of nations rests upon the integrity of the personal conviction of the individual members. So here the conative element is of a dual source—individual and collective.

There is also found in moral sentiments and beliefs which are mostly traditional in every nation this interplay of cognitive and conative processes. Sympathetic contagion, suggestion from admired personalities, self-submission, the study of arts and literature, the force of family code or traditions, etc., are the factors that contribute to the incipient stage of moral sentiments or beliefs in the individual minds. Reasoning and reflection enable the individuals to harmonise various sentiments and to form well-grounded beliefs. In comparisons with any of the crude instinctive impulses, such as anger, fear, hunger, lust, etc., the moral sentiment is remarkably feeble, but nevertheless it is found to control the powerful impulses. There are cases in which men, when perishing of thirst, are found to pass the cup to another, saying, "His need is greater than mine." So whence does this overruling conating force come in the feeble moral belief ? On this point opinions are

divided. William James says : Ideal impulse < instinctive propensity ; Ideal impulse + X > instinctive propensity. But the problem then is—what is this X which enables the moral impulse to triumph over the far stronger instinctive propensity ? Plato and some modern moralists say—It is Divine Reason that sits in the head and controls the passions which reside in the belly. Shaftesbury says this X is “good taste.” According to Bishop Butler it is ‘conscience.’ Adam Smith says—it is the impartial spectator within the breast. James refers it to “the fight of the will.” The utilitarian moralists perhaps will say that it is fear of punishment or desire of reward. Of course none can deny their importance in the guidance of moral life but they are very vague and ill-defined : none of them can adequately explain the process in which it effects the marvels of moral life.

The firm belief in morality even in the extreme vicissitudes of life can be found in the character of the finest type while the working of instincts in accordance with their relative predominance is a matter of every day occurrence in ordinary life. In men of high character all conative tendencies are harmoniously organised and directed towards the realisation of higher ideals. In course of their experiences of striving in pursuit of different goals they realise what actions meet with the moral approval and what, the moral censure, and thus build up a system of beliefs about themselves and about conduct and character in general. The system of beliefs thus formed about their own nature develops in their mind a sentiment of self-regard which dominates their personality. The conative energy of moral belief is derived from this sentiment of self-regard which is strongly awakened particularly in cases of moral conflicts. This self-regarding impulse triumphs over all the other desires of the self and realises in action the ideal of conduct which it has formulated and accepted. We have found even in political beliefs, whether in autocracy or in democracy that attachment is the main thing upon which

rests the ultimate bond of nations. But does not this sense of attachment essentially involve extension of self-regard to the party ? Here the self grows richer in meaning and becomes more or less identified, at least in the individual's mind, with the party. The party being a part of his larger self, he feels elated at its triumphs and equally pained at its failures. So the firm belief in a certain political movement is a form of extended self-regard. This sentiment of self-regard is built up in our mind by a multitude of experiences and can become further widened through the influence of the 'herd' instinct which strengthens our attachment to a party. So it is perhaps not the fact, as maintained by Messrs. Tansley and Trotter, that the ego-complex is one thing and the 'herd' complex is another, but on the other hand the ego-complex may be further extended to embrace the 'herd' complex.

All religious beliefs are not of the same categorical character. Religion first of all originated in spirit-worship and later developed into monotheism with the intellectual progress of the people. But the primitive belief in religion had its origin in the instinctive function of fear.<sup>1</sup> The primitive people believed that there were mystical powers in ultimate control of the natural events and that they were the determining agents of their destinies. So different forms of worship and rituals were introduced to avert the wrath of these spirits or to buy their favour by offering sacrifices. Hence we find the prominence of devil-worship amongst the lower races and also the traditional persistence of kindred beliefs among the ignorant in civilised countries. So Prof. Watson remarks, "If the fear element were dropped out of any religion that religion would not survive a year."<sup>2</sup> However there has gradually been a substitution of love for fear

<sup>1</sup> My article on 'The rôle of fear in Primitive Religion.'—The Visva-Bharati Quarterly, April, 1926.

<sup>2</sup> 'Behaviourism—The Modern Note in Psychology'—Psyche Vol. V, 1924-25.

as remarkably found in Christianity, Buddhism, Vaishnavism and other religions. Besides, there are still prevalent some religious practices, such as deification of carnal love, the cult of the phallus, the sacred prostitution and rites of varying degrees of obscenity ; but they are directly or indirectly in the active attitude of the self in the gratification of sex-desires.

But none of our beliefs—political, religious or moral can well function unless there is a belief in things. The belief in reality of other things is always a presupposed condition of our action and is as important as our belief in the enduring reality of ourselves amidst changes. But the belief in things cannot be achieved without a belief in the continuity of oneself ; the former is a projection of the latter. According to the latest sensationist psychology the belief in our personal identity is due to a mass of bodily sensations which is relatively stable in character and is composed of sensations from all our bodily organs, but specially our visceral organs. It implies that if there be any radical change in the mass of sensations or the coenesthesia we should lose our belief in our own identity. There may be found causes which testify to the truth of this doctrine but instances are not wanting to disprove its absolute character. In violent emotional excitements, organic diseases and sea-sickness the coenesthesia is profoundly changed, but we do not thereby lose our belief in self-identity. Stout says, "Objective coercion is of the very essence of belief." (Manual of Psychology, p. 675). Again by 'objective coercion' he means "whatever condition controls and limits subjective activity, so as to enforce one way of thinking and to make other ways difficult or impossible, is from the psychological point of view an objective coercion." (*Ibid*, p. 679). So for actual belief some restriction of subjective freedom is necessary. It is undoubtedly a fact that in the absence of objective control, that is to say, when we can arbitrarily think of A as B or as not-B, there can be no belief or dis-belief in the process. The objective control

restricts the alternatives and determines our belief. So far Prof. Stout is quite true in his view-point, but it seems that all the implications of the view have not been properly utilised. If objective coercion be the determinant factor of our belief in the real existence of the object, the nature of the objective coercion must first be believed in, otherwise it cannot determine us one way or the other. That which will restrict us in the alternatives of our thought-process must be sufficiently potent for our belief. So we do believe not only in the reality of what is restricted in the thought-process but also what restricts the thought-process. The belief in the latter process is in no way less cogent than the belief in the former. So what resists as well as what is resisted enforces our belief in their real existence. So the core of our belief in our own reality and identity lies in the experience of our continued striving. The fact that we had strivings in the past, and that we still strive at present without any sudden radical alteration of our conative tendencies is indicative of our continued existence through the past and present and the belief in the real existence of our enduring self rests upon the experience of our persistent striving. There is of course some abiding purpose behind these strivings which express the whole of the soul. Whatever may be the motivations of these strivings the whole content of the self requires to be reflected in them; otherwise our belief in self-identity is shaken as it often happens in the case of double personality where the self becomes unconsciously divided. So it is our strivings, but not mere thought-processes as Descartes asserts, that determine the belief in our reality. The power of resistance I possess develops in me the idea of my own reality. The fact 'I exist' indicates my determinate nature to the exclusion of others, that is to say, I resist others in asserting my own existence and I exist independently of others. If this resisting power be altogether of wanting in me, I shall at once lose all my belief even in my own reality. So the pathological

patient who feels that nothing is real, not even himself, is generally found to have all his conative energies altogether sapped through mental conflicts and all his strong impulses or desires altogether annihilated. It is, therefore, our own self that is believed in as real, because we desire and strive, while any other thing is believed to be true in so far as it seems to us to be like ourselves, that is to say, in so far as it seems to have a determinate nature of its own which resists us. So without this resisting element in the self, the self loses its own determinate nature and cannot be believed in as real. Every object has a determinate nature of its own which we cannot change at will; we are to overcome the resistance it will offer when we strive to change it. So solidity or weight of its object is regarded as a proof of its reality. It is on account of this, therefore, that we feel more convincingly the reality of our opponent or a ferocious animal. But when we can think of an object in any way we like, that is to say, when we are quite free to make what mental combinations of the object we will we cannot then believe in the objective nature of it just as in the case of our own free imagination where we do not have any resistance to our effort to change the mental combinations this way or that; for example when a man is imagining 'fairies inhabiting flowers.'

Thus we do not believe what can be freely imagined and what can be freely changed this way or that without any resistance. The wilful transformation of the idea of an object cannot be freely made unless the object lacks a real nature of its own; otherwise there will be a mental conflict and a break in the continuity of thought. So when there is no restriction of subjective freedom we get a mere play of imagination as if we are in the world of fantasy. It is the determinate nature of the idea that imposes some restriction on thought, rendering it difficult for us to change it at will; that is to say, when we assert the reality of a thing it means that the thing asserts itself in offering resistance to our effort to change it, compelling

us to think out a plan and thereby to exert ourselves for the realisation of our desire. This sense of self-assertion is at the bottom of our belief in the reality of ourselves as well as of other things. The dominating obstinacy of ideas is particularly noticed in abnormal cases, such as 'compulsion neuroses,' 'fixed idea,' etc. The objective coercion which Stout regards as the essence of belief is due simply to the self-assertive nature of the thing. So when mere wishing to have a change in the world about us becomes identical with having it, our freedom being absolute here, we do not feel any opposition and so there is no such thing as belief in the reality of the world about us though we may believe in the reality of our self. It is therefore a fact that the master who finds satisfaction of every desire immediately by the mere wishing is often found incapable of respecting the feelings of his servants. Thus it is found that the self-assertiveness is essentially the core of all our belief in the reality of things.

In the case of those simple beliefs which rest mainly on memory this conative factor is not altogether absent. Memory is not merely an act of inseparable association determined by the repetition of our experiences, but it is itself a conative activity. We remember and recollect effectively in proportion as we have a strong tendency for doing so. Smith and Prof. McDougall have found that one subject, when by practice he had acquired the art of maintaining an attitude as nearly as possible passive while reading again and again a series of twelve syllables, required more than 200 such passive repetitions in order to learn the series; whereas when he read a similar series with concentrated attention, only nine repetitions were necessary.<sup>1</sup> So conation plays a large part in memory—it is for the unity of interest and continuity of attention that the associated units of our actual experience are stably integrated and cannot be easily changed in their order

<sup>1</sup> The British Journal of Psychology, Vol. X. 1920.

at will. If we even attempt to excite a unit of an experience from the rest of its sequence we at once become aware of the gap thus made and feel disquietude in mind. It seems that the experiential units hang together very intimately and obstinately and possess a tendency of their own which can hardly be controlled without coercion.

We shall now at last turn to the primitive credulity which has already been referred to. In the primitive credulity inheres a very weak logical sense and so the primitive man accepts as real whatever object evokes any instinctive impulse. He personifies the sun, storm, floods, pestilence, pests, etc., and regards them as real as himself, because they are regarded as mysterious powers having ultimate control over his interests and destinies and consequently as real objects of his fear. So his belief in their reality is simply due to the fear he associates with the objects. Thus spirit worship was inculcated simply because of the belief that the mysterious powers being the agents of all natural evils, would, if not properly propitiated, bring forth all sorts of misery and disaster to the people. So it can be said that these superstitious beliefs were formed out of a so-called necessity to meet their practical needs. It is only when the interests of the people were at stake and they found no way out that they believed in the mysterious force behind the scene and invoked its favour. So instinctive impulses may be said to work behind these primitive beliefs in order first to initiate and later to uphold them. It is for this reason that we find that where there was no interest to be satisfied there was no tendency in the primitive mind to form any belief; for, the primitive people have not any intense curiosity nor any other necessity to concern themselves with questions outside the narrow range of their practical interests. These interests were not of a high order and were exclusively related to the activities which merely subserved the instinctive needs of their life. It is for the satisfaction of their immediate practical needs that they were interested

in different things and formed various beliefs so as to determine their behaviour. But the urgency of interests that determined their beliefs even on a scanty objective data could so strongly arise in their mind simply because of their immediate relation to this or that instinct. Primitive people hardly acquired any new interest in the variety of objects, other than such as Nature provides in the form of instinct, and so were quite indifferent to all actions which did not tend to satisfy the biological needs of life. The impulses that actuated them to actions were confined within the narrow circle of instincts. They did not, as a matter of fact, build up in their mind through actual experiences and higher forms of sentiments and thereby extend wisely their field of acquired interest. So they took interest only in those things that evoked and satisfied their instinctive needs, and in so far as their interests were thus excited by their objects they believe in their reality. But they did not care nor had the power to examine the sufficiency of the objective data to form their beliefs. They were simply actuated by subjective tendencies which could not have worked themselves out without these beliefs. So the belief of the primitive people in the reality of things which concerned them in the maintenance of their life rests ultimately upon the conative element of their instinctive life.

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## Psychology of Examinations

BY

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### *Functions of schools.*

Schools are supposed to perform three functions in education, that is, to know the initial capacity of the pupil, to develop individuality and to measure the results of teaching. The initial capacity is measured by what is called Intelligence Tests and the results of teaching by School Achievement or Performance Tests. The former is essential and yet wholly absent in our schools. Without Intelligence Tests classification of pupils is impossible and without proper classification teaching can never be made effective and the development of individuality which is the true aim of education can hardly be ensured.

### *The Present System of Classification.*

Children vary very considerably in mental abilities. So if you want to meet the varying needs of individuals by adjusting the class-room activities to the constantly varying capacities, interests and responses you must group them on the basis of approximately equal intelligence.

The present system of classification is based mainly on age and a general level of intelligence satisfying certain minimum requirements. In this matter very often the mental age is not given its due share of consideration and even the general level of intelligence is not determined by any tests scientifically designed. In certain cases an age-limit is imposed upon the entrants as a condition of admission. This has a moral significance though nothing practical is done to remove the defects of the present system of classification or

grouping for the purpose of class-teaching. "Educational age" would certainly be a better measure for the classification of pupils than the "mental age." The former is computed by taking the average of the pupil's age in different subjects. This average is again determined with reference to age norms established by giving a series of tests to a large number of pupils of different ages. It is obviously not psychological to group together pupils on the basis of chronological age merely and to treat them as a homogeneous mass for collective teaching.

#### *Performance Tests.*

We have in schools a system of Performance Tests called examinations. The object of this paper is to discuss the degree of useful purpose such tests (as they are designed and held) are calculated actually to serve. The Performance Tests as they are now held are regarded valuable in that they help teachers to group children for re-classification at the end of a year's course. These tests are therefore a true index of the pupil's actual educational standing which would be of material help to put each pupil on his proper educational level. Secondly, they are useful in connection with the recruitment of candidates best qualified to fill an appointment or benefit by any scholarship. In that sense these tests are selective. Thus the Performance Tests have an additional objective in certain cases, *viz.*, to test certain acquisitions which are generally necessary in most professions : though it is obviously impossible to design Performance Tests particularly for the purpose of getting hold of the boy marked out by some particular natural aptitudes. We must remember in this connection that Intelligence Tests merely explore the potential abilities and hence can only theorise on what the pupil is likely to achieve, whereas the Performance Tests tell you definitely what the pupil has actually achieved.

In physical sciences the measurement is valuable because it is reliable. It is reliable because it is objective. How can the measurements of mental products be made objective? In certain subjects the measurements have been made objective by devising and preparing certain scales to evaluate certain educational products, *e.g.*, arithmetic, handwriting and spelling. Thus the quality of a kind of handwriting may be determined by sliding the specimen to be measured along the Thorndike Handwriting Scale. This makes it possible to express the judgment numerically though it cannot be said that even in such cases the element of subjectivity or personal equation is totally absent. It is therefore, evident that the less the scope of subjectivity in the measurement, the more valuable and reliable it is. Some devices will needs therefore, to be thought out in connection with Performance Tests so that the elements of subjectivity may be reduced to a minimum, specially in respect of subjects where the construction of scales and their use is not practicable.

In order to design useful tests one must definitely and clearly know what the pupils are required to acquire. One is faced with this outstanding defect in the system of our education. The existing curriculum is never proposed to be treated as a definite fulfilment of specific needs in respect of different subjects. For example, the syllabus in English does not make it clear which of the four aspects, *viz.*, reading, hearing, writing and speech, is to be emphasised in different stages of school life. A little reflection will show that it is desirable to prevent the wastage in schools by so designing a course of instruction for the Bengalee that it might be planned to yield the highest possible "surrender value" at any point of school life, and lead, as far as possible, to subsequent independent study. It is obvious that the need of the English language for the boy who leaves school early is different from that of the boy who completes the course or approaches completion. If we analyse the Bengalee's need

of English we shall find that even up to class VII (4th class) the language ability most needed by pupils is the ability to read English. Those who stay longer may need the writing ability in some degree. But only those who pursue their study up to a professional stage may only come into contact largely with people who may not understand Bengali and may therefore need to speak and understand spoken English. Obviously of these four aspects the receptive ones (reading and hearing) are easier than expressive aspects (writing and speech). Of the receptive aspects, again, reading is easier than hearing, writing less easy and speech the least easy. Accordingly if you really want to benefit the boy who is destined to leave early by giving him any one effective power in the language before he actually leaves, you cannot do better than develop in him the reading ability instead of wasting your time over practice in writing or speech. The text-books written are all composite ones intended to train the pupils in reading, hearing, writing and speech. The absence of separate provision for practice in these differentiated functions forms no effective power in the language, whereas the secret of success is found in the practice and test of one specific function. Plurality of functions makes teaching ineffective and encourages waste. The ordinary text-books seem to be designed on the assumption that all will complete them. But we forget that in Bengal practically speaking there is only one school system which includes pupils of all classes and all grades of intelligence and status. The result is "an educational wastage" due sometimes to poverty but largely to mediocrity. What is meant is that all have access to the system of secondary education. The result is that a very wide and unselected "sampling" of the population seeks admission in high schools. The secondary curriculum has been declared, as a result of investigations, to be really difficult for about 30% to 40% of the pupils, *viz.*, those who would not in a normal condition be studying in that type of school at all. Only the

boy who is above average or at any rate average can complete the course and derive benefit from it, but others are eliminated from schools before the completion of the course. There are some who are not below average and could finish the course if they would, but they would not, simply because they did not join the school with that object. This is the case with all subjects of the curriculum. Even in the mother-tongue the precise need at different stages of school life is not the guiding principle of the syllabus. So one is really at a loss to give desired shape to the test paper. There are other factors involved in the problem of examinations which need serious thinking. Formal examinations are regarded as harmful educational agencies if they are not rightly designed. For example, they are pretexts for cramming and serve to limit the effort in the direction of immediate success in securing marks. Further, examinations fail in their purpose because they are not designed to suit the varied temperament. Often the pupil who is expected to pass an examination is just the one who fails, because his sensitive nervous temperament makes him unsuitable for the particular kind of test he is compelled to take, whereas a child of a different temperament and perhaps of far less ability would often pass the same examination with ease.

#### *New Education and Tests.*

The new education reveals the fact that different types of children require different kinds of education. It is only reasonable that examinations, so long as they are necessary for entrance to professional life, should also be compatible with these differences. Thus examinations should be fitted more closely to the needs of the individual child and to those of the type to which the individual belongs. Educationists are, thus, considering whether existing examinations can be replaced by a different method of evaluation. But we must

remember that we cannot do away with public examinations. These are unavoidable in our educational system. Success in a public examination measures the intellectual advancement, opens out prospects of earning livelihood, improves one's status in society and secures political and other privileges. This being so, the main object of the scholars is to get through the examination and of the teachers to prepare them for it. This preparation suggests both matter and method. *To learn* to meet the requirements of an examination and how best to learn it for that purpose are the vital questions that seriously engage the attention of the students. The answer is suggested by the questions set for examinations. Questions may be set to demand knowledge of facts, author's opinions, reproduction of other people's views, memory work, useless details and points serving no practical purposes. The preparation to cope with such questions must be exactly on similar lines. Hence pupils by the type of the questions are induced to pursue "muscular method" of learning history, "memoriter method" of reasoning and the verbatim reproduction of the text. So it is clear that the system of examination materially influences the method of teaching and of learning. The Performance Test does not consist in testing the power of memorising or reproducing the views of the author or somebody else. The test should be so designed as to serve as a future guide in regulating the activity of the students in the matter of preparation for examinations. Under the existing system the Performance Tests are also meant to test at once such different things as intelligence, extent of knowledge and general and special usefulness. This is obviously absurd. Can we possibly find a single usable symbol for the length, weight and cost, say, of a fountain pen? But the traditional system constantly attempts an absurdity. For example, the marks secured in arithmetic test or, for the matter of fact, in an essay are meant to be a symbol at once for speed, accuracy and time consumed. Really in arithmetic you need

to measure accuracy and speed in mechanical processes and capacity in problem-solving. Similarly, in reading you need to measure recognition of word and comprehension ; in history, historical sense ; in geography, the practical aspect ; in the mother-tongue, reading ability and comprehension, and in the later stage of school life, appreciation and expression. The main object of this paper is to suggest how Performance Tests ought to be designed so as to allow for the specific needs and various types of children. The test is really influenced by the syllabus and its aim, which it proposes to achieve. For the School Final and Matriculation Examinations, to satisfy the principles already enumerated, the Performance Test in English should be a test of.....

A. (1) Intelligent approach (2) comprehension with speed factor (3) expression (4) interpretation of facts.—All this in respect of text-books on current topics, modern modes of life and activities written by living authors.

B. (1) Appreciation (2) expression of the idea in modern English.—All this in respect of text-books of dead authors of the past ages describing or discussing subjects or topics more or less obsolete and that in a language which in many ways appears peculiar to the learners.

C. Speech ability of those who propose to offer a test of spoken English.

D. Ability in using idioms in translation. A continuous translation of a passage into English is not very useful. Composition serves the purpose for which such a test is ordinarily set.

E. Ability in writing letters and describing scenes and events with which the candidates are familiar. Artistic, abstract and *pro* and *con* essays are now the practice in connection with public examinations held even at the end of the school course.

In arithmetic the test should be based on problems which are of practical use in life and the speed factor must be

remembered in measuring the success of pupils in processes.

In history to achieve the true object of history—teaching (development of historical sense, discouragement of "muscular method" of learning) the following types of questions seem useful.....

- (1) Grouping of persons and events of allied character.
- (2) Arranging persons and events in chronological order.
- (3) Selecting correct statements and rejecting inaccurate and incorrect ones.
- (4) Underlining right answers.
- (5) Filling up omissions.
- (6) Continuous and well-reasoned narrative.

#### *The Existing Defects of Examinations.*

The present practice requires a fixed time for definite number of questions, but no special credit is given to those who finish the assigned task before the time expires. Questions are now designed chiefly to test knowledge. But there are other acquisitions which are generally necessary in all spheres of activity and which may be tested. The chief discouraging feature of the present system is to set questions which are intended mainly to test the memory. But we should not forget the psychological fact that individual differences are quantitative and not qualitative.

The competitive examinations, it should be noted, are not educational in purpose. Tests generally are and ought to be qualifying. If in a qualifying test the names of the candidates are arranged in order of merit it becomes competitive. Competitive tests are very likely to do physical, intellectual and moral mischief. But such tests again are unavoidable in connection with the recruitment of qualified candidates for certain professions, though they cannot pronounce judgment upon the smartness, physical fitness and

similar other virtues which go to form character. We must besides have the examination of the right kind. This kind of examination ought to offer a wide range of choice of subjects in order to allow for individual differences and to encourage a varied school curriculum. It does not seem necessary to make it obligatory on candidates to pass in all subjects of examination at the same time, seeing that such an examination is meant to cover a fair range of subjects. A certain number may be taken together with the privilege of adding one or two more at a later time. The practice of taking the whole examination over again by a candidate failing in one of the required subjects is a hardship fraught with serious consequences. The only point that may be put forward in support of this practice is the disciplinary value which consists in bringing all alike to the required standard at the same time. All thus about the right kind. What about the right time of examination ? The right time of the first formal public examination seems to be the age of 15 or 16, when the freshness of interest in the acquisition of knowledge in different branches begins to wane and the keenness on the later interest of wage-earning activity does not yet begin to shape itself.

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## A New Experiment on Brightness Discrimination

BY

HARIPADA MASTY.

*Introduction.*—Discrimination of brightness is a classical experiment in Psycho-Physics and its experimental investigation dates back from days long before Fechner. It has been investigated by a large number of illustrious scientists like Helmholtz, Aubert, Kraeplin, Wundt. But the results that have been published are “extraordinarily divergent” (Kulpe). Whereas in the case of other sense qualities we have been able to reach more or less stable results in discriminative sensibility, the relative difference limens for intensity of light as reported by different investigators range very widely. If we are to conclude from the published works on the subject, its value may lie anywhere between  $\frac{1}{40}$  to  $\frac{1}{230}$ .

One of the reasons of this wide divergence of results lies in the variety of the methods used. The investigators differ not only in the Psycho-Physical procedure of sensation-comparison, but also in the phenomenal experience or gestalt constituting the fabric of comparison itself. The photometric methods adapted from Physics for the measurement of the intensity of light are also different and the physical formulae used by them do not take into account the same set of physical and physiological conditions. To judge from these differences, each method seems to work under peculiar sets of conditions and appears to be liable to special sources of errors, in addition to those which are common more or less in all experiments on brightness discrimination. These common sources of error, too, such as fatigue, adaptation, duration of stimulation, accommodation, etc., have not been adequately

controlled. Thus, it is difficult to compare the results even of those who have employed the same method.

Under the circumstances, it is desirable to simplify the nature and conditions of stimulation and the physiological processes as far as practicable, so that the sensible discrimination may be reduced to its simplest terms, and the influence of the different sources of error be minimised, if not eliminated altogether. The present experiment was devised in order to achieve these ends. The main point of difference between the existing methods of brightness-discrimination and the method of the present series of experiments lies in the use of a comparatively new method of photometry. The purpose of this paper is to show from a few preliminary experiments that this method may profitably be employed in the investigation of brightness discrimination.

*Description of the method.*—In ordinary experience, the simplest case of brightness comparison occurs when objects of apparently equal reflecting power are compared at different distances from the same source of light. With this fact as the basis a photometric method is devised, in which not only the conditions of observation, but also the observation itself may be reduced to simple terms. In a dark room two white reflecting fields are placed in the path of a cone of divergent rays from a single source of a light of approximately constant consumption. One of the fields is placed at a fixed distance and the intensity of the light reflected from it is taken as the standard. The other field is moved to and fro along a straight line from the source and the intensity of the reflected light from its surface is used as the variable component of comparison, and varies inversely as the square of the distance from the source. The dark-adapted subject looking with one eye through a blackened tube gets a simultaneous view of the two fields in the form of a circle, divided into two halves in the middle, each field contributing a half of the view. The

discriminative judgment of the subject is made specially easy by this device as the two fields are thereby included within the same configuration of a circle and the liminal experience appears as a 'step-wise change.' The experimenter on his part has only to record as accurately as he can the distances of the variable from the source at which changes of judgment are reported. It is easy to devise a sliding arrangement for the movement of the variable field which would register its exact position along a scale.

*Photometric Calculation.* — The intensities of light stimulating the two semicircular halves of the observing eye can be only relatively measured and their ratio can be calculated as follows (see diagram 1).

If  $I_1$  be the intensity of light effective on the standard side of the eye and  $I_2$  that on the variable side, and  $i_1$  be the intrinsic intensity of light as incident on the standard reflecting field and  $i_2$  that of the variable reflecting field,

$$I_1 : I_2 :: i_1 : i_2 \quad \dots \quad \dots \quad \dots \quad (1)$$

neglecting the very small difference in intensity of the scattered light from the reflecting fields due to inequality of their distances from the eye.

Now again

$$i_1 : i_2 : \frac{1}{d_1^2} \times \frac{1}{d_2^2} \quad \dots \quad \dots \quad (2)$$

(<sup>1</sup>) (if the axis of the divergent cone of rays is normal to the fields)

or,

$$i_1 : i_2 :: \frac{\cos \theta_1}{d_1^2} :: \frac{\cos \theta_2}{d_2^2} \quad \dots \quad \dots \quad (3)$$

(<sup>2</sup>) (if the axis of the divergent rays be inclined to the plane of the fields)

in which  $d_1$  = distance of the standard field from the source,

$d_2$  = " " " variable field " " "

$\theta_1$  = angle of incidence of the axis of the divergent rays on the standard field

$\theta_2$  = " " on the variable field,

Thus

$$I_1 : I_2 :: \frac{1}{d_1^2} : \frac{1}{d_2^2} \dots \text{as (4)}$$

(if the angle of incidence is zero)

or,

$$I_1 : I_2 :: \frac{\cos \theta_1}{d_1^2} : \frac{\cos \theta_2}{d_2^2} \dots \dots \text{as (5)}$$

(if the angle of incidence is positive)

It may be suggested that the method outlined here would have some advantages over the other methods in vogue. Reserving for a future paper a detailed comparison of the different methods in the light of results of actual experiments, it may be pertinent to refer to a few of them in passing. We are here, in the first instance, able to avoid the assumption of physiological phenomena whose exact nature we do not know, as for example, the fusion of alternate stimulation of the retina by black and white sectors which is implied in experiments on brightness discrimination with Masson's disc. On the other hand under the conditions of stimulation in the present method the underlying physiological processes appear to be simple and also directly proportional to the physical energy of light. The nature of the subjective experience in the comparison is also unambiguous. The liminal white appears as just a shade duller than the standard and the comparison may also be made at any region of the brightness scale. We are not compelled, in other words, to work only with an extreme case of brightness difference as in some of the current methods. For the purpose of experimental variation of the variable brightness, our arrangement is easier than in the Masson's disc method which has been largely used for exact determination

of brightness D. L. and verification of Weber's law in the field of brightness. We can also get over some of the usual difficulties of the photometric method at least partially, *e.g.*, those of eye movements, imperfect sensory adaptation, fatigue, etc. The task of discrimination by the subject can be rendered easy by comprehending the two fields under a single circular surface of observation. In the course of observations by the subjects reported below, they could locate the exact point of just noticeable difference or sameness by the 'feeling of a sudden discontinuity in a texture of brightness or of a sudden filling-in of a discontinuous texture.' It may also be noted here that for the same subject the reports of discrimination in the same direction occurred at very nearly the same point on the scale in the different readings during an experiment. With our arrangement we can also easily apply all the three Psychophysical methods, *viz.*, by providing a Rack and Pinion sliding arrangement which can be operated by the subject himself.

*Some preliminary experiments with the method.*

A few preliminary observations with the method were made in the months of November and December, 1926. The instrumental setting of the experiment was rough. The mechanical slider arrangement being not yet ready, the reflecting fields were moved with the hand.

*Apparatus :—*

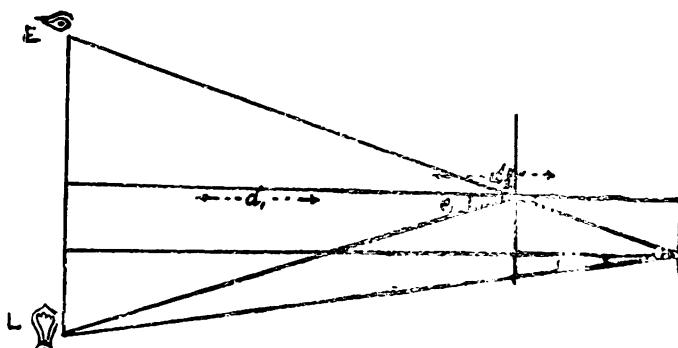
It consisted principally of three parts (1) a source of light in a dark room, (2) two reflecting paper surfaces which could be moved along a scale measuring distance away from the source of light, (3) a blackened observation tube through which the subject got a limited view of the two reflecting surfaces at the same time.

At one end of a long table was placed a 50 c. p. watt lamp within a covered box with only a small rectangular

aperture in one of its sides. A millimetre scale was fixed on the table and it recorded distance in millimetres away from the lamp. Two rectangular pieces 15 cm.  $\times$  15 cm., cut out from the same white paper of uniform weight and thickness, were pasted on two metallic vertical plates of blackened surface. These plates were adjusted to two stands by means of clamps. When the stands were placed on either sides of the scale at the same distance from the lamp, the paper surfaces on the plates were in the same vertical plane and their inner sides touched edge to edge. The subject who sat on a high stool behind the box looked at the papers through the blackened paper tube of 3 cm. diameter. The projection of the tube on the fields of observation was circular and was equally divided between the two fields with its centre falling just on the middle of the vertical slit between the two papers. The tube, rested on adjustable supports on the cover of the box, could be slightly tilted so that in all positions of the stands, the central axis of the tube was projected on the middle of the vertical slit between the two fields. The stands supporting the two fields of observation were so placed on the two sides of the scale that the central axis of the tube, the line joining the centre of the lamp to the middle point of the vertical slit between the two fields, and this slit itself, lay in one common vertical plane. In the dark room where the series of experiments was conducted, all lights were put out except the lamp within the box. As the centre of the projection of the cone of rays emitted through the aperture in the box coincided with the middle point of the slit the two fields were uniformly equally illuminated.

The fields of observation were raised a little higher than the level of the lamp, so that the incident rays on the fields were slightly inclined to the horizontal line. This inclination varied from about  $15^\circ$  to  $5^\circ$  at the different distances of the fields from the lamp. As the variable field was a little

further away from the standard, the mean angle of incidence on it was slightly smaller than the mean angle of incidence on the standard. But the projections of the two semi-circular halves of the observation tube on the two fields were inclined at the same angle. The subject saw the two fields in the same projection. In this way secondary criteria arising out of the differences in the distance of the fields were largely removed. The arrangement is represented diagrammatically as follows



The intensities of light effective on the two halves of the eye were calculated by the following formula

$$\frac{I_1}{I_2} = \frac{d_2^2 \cos \theta_1}{d_1^2 \cos \theta_2} \quad (\text{sec ante})$$

After properly arranging the apparatus the subject was brought into the dark room and after about 10 mts. the experiments were begun. We had altogether five subjects all of whom were considerably trained in psychological experiments. The J. N. D. of brightness was obtained at six different positions on the scale, *e. g.*, 60, 90, 120, 150, 180, and 240 cm. in some cases. This gives us a range of intensity in which the nearest distance produces sixteen times the illumination at the furthest distance of 240 cm. In a few cases observations at all the positions could not be taken for want of time or for complaint of strain from the subject.

Only the right eye was used, the other being blind-folded during the experiment. Each series of experiments lasted from 40 mts. to an hour. Altogether 67 series were taken.

The following procedure was adopted. When his eye was dark adapted the subject was asked to put his observing eye into the tube and see if the centre of the further aperture of the tube fell upon a black spot on one of the paper halves. After a little rest the experiments were begun. The experimenter called out 'Now' and the subject looking through the tube was asked to make the required observation as to the two halves of the circular field seen through the tube being same or different in brightness. About 2 or 3 seconds after calling out 'Now,' the experimenter moved away the variable fields and noted the point on the scale where the just appreciable change in brightness was reported by the subject. The subject then closed his eye and informed the experimenter if he got any after-image and also when such after-image disappeared. When the after-image had completely disappeared, the experimenter asked the subject to open his eye and look into the tube again. The observation in the reverse order was taken in the same way as before. Any single reading did not take more than half a minute. In this way similar adaptation of the eye to the different intensities of light was attempted to be secured on the one hand and excessive fatigue to be avoided on the other. The movement of the variable field could only be approximately regular, as it was done with the hand. In future this may be done by a slide-arrangement.

Though both the Constant Method and the Limiting Method were used in the beginning the former was ultimately given up, as it required prolonged observation, causing fatigue to the eyes and general worry to the mind. All the figures have been calculated from observations made with the Limiting Method.

TABLE.

The ratio of the just appreciable decrease of intensity to the standard intensity of light, when the standard field is placed at the different distances from the lamp.

Subject.	60 cm.	90 cm.	120 cm.	150 cm.	180 cm.	240 cm.
M.G.	.072	.074	.069	.075	.066	.026
S.S.	.064	.036	.028	.023	.024	.021
H.M.	.045	.041	.033	.046	.042	.026
S.B.	.056	.060	.064	.092	.100	—
M.S. <sup>1</sup>	.120	.131	.105	.110	.122	—
Average,	.052	.089	.048	.059	.059	.024

The threshold value of the variable brightness varies not only at the different positions of the standard, but also for the different subjects. But with the exception of subjects Nos. 4 and 5 who could not be given as much practice as the other three, the subjects show a fairly constant ratio. It is evident that practice has a great effect in reducing the ratio. Probably it increases the discriminative sensibility by facilitating judgment through gradual fixation of delicate subjective criteria in the mind of the subject. The amount of practice given to the subjects could not be made equal and it seems that the results under the different heads of the table represent different levels of practice effect. There is a general tendency for the results to be lower in those cases in which practice was continued for a long time.

It should be noted here that the practice period for the 60 cm. series was fairly long, though not longer than for the 120 cm. series. Still, the figures are not low enough. On the other hand, the figures for the 240 cm. series in which

<sup>1</sup> He complained of continuous eye-strain. He worked as subject only for one day. In calculating means his results are not included.

practice was less than in the case of 60 cm. series, are much smaller than the other figures. This seems to be due to greater fatigue of the eyes at the nearer ranges. That it may be so is indicated from the longer continuance of the negative after-image as reported by the subjects in the 60 cm. and 90 cm. series. The results at the further ranges are, on the whole, more reliable than those at the nearer ranges also from another consideration. The amount of error in recording the exact point of the change of judgment is bound to be larger at the nearer ranges.

Taking all these into consideration, it seems that we should have practiced with the series at the further ranges for a much longer time than we have actually done. If we draw our conclusion from the 210 cm. series, the photometric method outlined in this paper, even with the crude instrumental setting improvised for this preliminary series of experiments, has been able to record a discriminative sensibility as fine as .021 or about  $\frac{1}{50}$ . It may be hoped that with improvement of the apparatus and larger amount of practice the method would give more delicate results.

It may be incidentally pointed out that the method can be well used for the verification of Weber's law and the preliminary results that we have recorded above indicate that the just appreciable change of stimulus has a tendency to be more or less constant for different values of the standard stimulus. This tendency is specially marked in the results of subjects Nos. 1 and 3 who had, by the way, the largest amount of practice.

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## Notes and Abstracts

**Journal of Applied Psychology, Nov. 1, 1927.**

*An investigation of character traits in delinquent girls :*  
*H. M. Cushing and G. M. Ruch.*

A group of delinquent girls and a group of High School girls were subjected to the following tests: False Book titles test, Over statement test, Social preference test, Social attitudes test, Offense rating test and Psychopathic questionary. The delinquent girls manifested the undesirable traits to a marked degree. The length of their commitment to a state institution does not seem to influence the result.

*Further study of want versus commodity advertisement :*  
*E. K. Strong and H. R. Laslett.*

There are two major objectives in advertising, first, to make a reader want; secondly, to give a solution showing how his desire may be adequately satisfied by means of the advertiser's commodity: A 'want advertisement' is that which emphasises the utilities of a commodity. A *commodity* advertisement on the other hand insists, on the article, the firm's name and other similar features. Strong and Stevens have found that the latter type of advertisements are less effective. The present study presents further data on the memory value of tradenames in want and commodity advertisements.

*Memory as affected by isolation of materials and by repetition.*  
*H. F. Adams.*

Strong has shown that the efficiency of the size of an advertisement varies as the square root of the area. This fact has been variously explained, as being due to (1) magnitude

of the advertisement, (2) its isolation from other factors and consequent absence of counter attractions, (3) better chance of display, etc. The present paper presents the data of a series of experiments similar to those of Strong and reaches the same conclusion. In regard to repetition, the author concludes that it is effective but at the same time, it induces a certain degree of inhibition.

*Compensatory function of the movies :*

*H. C. Lehman and P. A. Witty.*

The authors have tried to discover to what extent the moving pictures are liked by children. He has studied 3150 children, male and female, whites and negroes, and has come to the conclusion that there is but little difference in the frequency of visits that each of these groups pays to the moving picture theatre. By means of a questionnaire, he finds out that a visit to the theatre is regarded by children as one of the greatest treats. He explains this liking by the hypothesis that the moving picture is an 'escape mechanism' in the Freudian sense.

*Calcutta University.*

**N. N. SENGUPTA.**

**Magnetism & Magic by Baron Du Potet Du Sennevoy.**

**EDITED AND TRANSLATED BY A. H. E. LEE.**

*(Published by George Allen & Unwin, Ltd. Pp. 151, Price Rs. 6.)*

This book is an abridged translation of "La Magie Dévoilée" by Baron du Potet, first published in 1852 in Paris. Jules-Denis, Baron Du Potet de Sennevoy, was born of an old noble family. In 1815 he was attracted by the school founded by Mesmer and he studied under Deleuze, Puységur and the Abbe Faria. In 1820 he performed certain experiments on the sick in the presence of many incredulous doctors

at the Hôtel Dieu. The present volume contains only about one half of the original for much of the latter was devoted to Du Potet's reflections and reveries, not to mention his denunciations of sceptical scientists. Du Potet discovered that without using Mesmer's elaborate apparatus and methods, he could obtain the same positive results. His method of magnetising was extremely simple. He used "passes" freely, regarding them as the mechanical equivalent to the will in directing the "magnetic fluid." A common experiment of Du Potet was to make some "passes" over one of several chairs in the absence of the subject; the latter, when called into the room, fell asleep when he came to the "magnetised" chair, the others producing no effect. As is only to be expected, Du Potet was held by some as a veritable high priest of "Animal Magnetism." By others, mostly doctors, he was regarded as a charlatan. In the translator's opinion, Du Potet was neither a profound nor an original thinker. He was certainly an idealist and a bold experimenter. In this book many of Du Potet's experiments are described in such a way as to make it possible for any one who has the inclination, to repeat them. To the esoterically-minded there is a great deal in the book which will make a strong appeal. For example, many will feel stirred to know that Sorcery is, "a bond or charm passing from the sorcerer's spirit through the eyes of the victim to his soul: the instrument used is a pure, shining, subtle vapour emanating from the blood engendered by the heart's warmth: itself reflecting perpetually similar rays through the eyes." On the other hand, to those who are still able and willing to maintain a state of suspended judgment on problems of this nature, the book will afford much entertainment on historical grounds.

*Banchi.*

OWEN BERKELEY HILL.

**The Mothers by: Robert Briffault.**

In this volume, which purports to be the first of three, the author develops the theme that the social characters of the human mind are traceable to the operation of instincts that are related to the function of the female and not to those of the male. He considers that primitive societies could not have been patriarchal in their organisation for in such circumstances it is inconceivable that the mind of women should have exercised so profound an influence upon human development. Ever since the publication of Bachofen's *Das Mutterrecht*, the question of the primordial "matriarchial" state has been one of the central problems of anthropological interest. In his monumental work, *Primal Law*, (largely based on juristic studies in India), Sir Henry Maine came to the conclusion that the primal state of society must have been a patriarchal one. In the years that have elapsed since the publication of these two notable books (1860) the researches of McLennan, Lewis Morgan, Lubbock and Hartland have accumulated evidence in favour of the first of these two views, and perhaps the majority of anthropologists to-day are inclined to support the matriarchal theory. In support of his contention of the priority of the matriarchal organisation, the author cites the animal world wherein, he maintains, there is no trace of patriarchal organisation. Be this as it may, the author, like many other disputants of this question, appears to overlook the possibility of this point of priority having more than two alternatives. For instance, it is by no means improbable that the matriarchal system with its avuncular complex may represent one mode of the many that mankind has adopted against the tendencies denoted by the term Oedipus complex. At any rate, the repression of the facts of paternal procreation, such as Malinowski found among the Tobriander islanders, although by no means a necessary accompaniment of mother "right, must be regarded as a valuable support to whatever motives led to that

institution. It is to be hoped that in the subsequent volumes the author will deal with the question why father-right ever came to supplant mother-right. So far most writers have waxed enthusiastic over the idyllic system prevailing under mother-right and often tend to take the book represents a prodigy of research. There are many references to Indian institutions and customs. As might only be expected, the author devotes much attention to the Nayars of Malabar for they, like the Aruntas of Northern Queensland, constitute the El Dorado of the anthropologist. Indeed, one might adapt the saying of Voltaire about God and maintain that had neither the Nayars nor the Aruntas ever existed they would have had to be invented.

**Psychology Applied to Education by James Ward.** In this book are published for the first time a series of lectures delivered by the late Professor James Ward as long ago as 1880. The lectures were part of a course arranged by the Teachers' Training Syndicate. Shortly before Professor Ward died he gave the manuscript of the lectures to Dr. Dawes Hicks who has now arranged them and published them. Most readers of this book will agree with the opinion of Dr. Hicks that the principles propounded by Professor Ward more than forty years ago are surprisingly in accord with the best that has been thought and said upon the theory of education in recent years. As Dr. Hicks indicates in his preface the principle aim of the author was to inculcate into every student of education the paramount importance of having a connected and coherent view of the growth and development of the adolescent mind. The mind, said Professor Ward, can only grow by degrees; it cannot comprehend the agreement, or form a conception combining facts of a more general kind, till it has first combined facts more concrete and less general, whose more obvious points of identity are sooner evident. Just so often as it is forced to skip these earlier steps, just so often will confusion be the result. Professor Ward was fully aware of the distrust of educational theories which the

indiscreet enthusiasm of such reformers as Rousseau and Pestalozzi, engendered ; although, it must be admitted, the ideas of both these pioneers were as psychologically sound as they were practically important. Professor Ward considered that the essence of teaching is not the implanation of knowledge so-called into the mind of the child as the cultivation of mental quickening. He maintained that by judicious training in observation it is possible to make a child think when he is five years old. But if the child is left to itself till he is seven or eight, and then put to learn spelling and tables, it is really so smothered under a mass of crude and shapeless ideas, loosely strung to a tangle of vague words, that thinking is impossible. The author has a chapter devote to the training of the child in individuality and this should make a special appeal to all who are interested in education in India. Writing of toleration, he observes :... "toleration, even complete toleration, is not enough. A spirit of toleration that is never exercised is but a 'fugitive and cloistered virtue.' What we want are new ideas to try our tolerance and challenge our attention, new ideas in every department of thought and life in which progress is possible, new ideas to be received without prejudice or prepossession, not denounced merely as innovations nor applauded merely as novelties." Indians who fancy or, let us say, like to fancy that the Golden Age is behind them and a return to the Vedas is the sole remedy for modern ills, will find little encouragement in this book. On the other hand, their hardier kinsmen who have the requisite moral and intellectual strength to face the future, will doubtless agree with Professor Ward that we have more reason to fear lest the old should last too long than we have to fear lest it should pass too soon. The customary assuredly can take care of itself : the one thing needful is to foster and promote the new. To neglect or to retard it is the surest way to corrupt the world, transforming evolution into revolution or worse, replacing development by degeneration and decay.

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